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ABSTRACT

Research suggests that individuals who were never heavy, were once heavy but lost weight, or who are currently obese can be differentiated by physical self concept, number of hours spent in various activities, and the hierarchial reinforcement value of different behaviors. Subjects (N=99) completed the Tennessee Self-Concept Test, the Self-Control Schedule, the Paired Comparison Reinforcement Scale, the Health Locus of Control, and the Activities Questionnaire. Results indicated that obese individuals had a lower physical self-concept than persons in the other two groups. No differences in self-concept were found between the never-heavy and the once-heavy groups, belying the notion that overweight people continue to perceive themselves as obese after they become thin. The never-heavy individuals spent more time in vigorous activity, less time doing job-related work, and more time with friends than individuals in the other groups. The obese group found eating or engaging in passive activity more reinforcing than other groups. Findings indicate that persons who find food highly reinforcing and choose passive activities over physical activities are more likely to be overweight, have little self-control, and have low physical and total self-concepts. (Author/JAC)

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Differences Between Always Obese Individuals and Those Who Have Become Thin

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Paper presented at the meeting of the Southeastern Psychological Association, Atlanta, March 26, 1981.

Differences Between Always Obese Individuals and Those Who Have Become Thin

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The purpose of this study was to identify characteristics that differentiate between individuals who have never been heavy, individuals who were once heavy and subsequently able to lose weight, and individuals who are currently obese. Ninety-nine subjects were given the Tennessee Self-Concept Test, the Self-Control Schedule, the Paired Comparison Reinforcement Scale, the Health Locus of Control, and the Activities Questionnaire. One-way ANOVA's indicated that there was a significant difference between groups on physical self-concept, the number of hours spent in various types of activities, and the hierarchical reinforcement value of different behaviors.

Traditionally, attempts to modify obesity have met with limited success (Stunkard & McClaren - Hume, 1959). Those subjects that lost weight were rarely able to maintain the loss. However, within the past twelve years, there has been a dramatic increase in behavioral research and treatment of obesity. In a major review, Stunkard and Mahoney (1976) stated that "in an unprecedentedly short time . . . (behavioral) techniques have been shown to be superior to other treatment modalities for managing mild to moderate obesity" (p 54). However, these results have been disappointing since they show a high degree of intragroup variability and only about 15% are able to maintain the weight loss at two years follow-up. It appears as if some individuals benefit from behavioral treatment programs, while others are not affected at all. Very little evidence has been accumulated which can help improve the accuracy of predicting which individuals benefit most from specific interventions and most studies have made assignment to standardized treatments with little concern for individual subject differences. However, looking at individual differences may account for the variability of response to treatment and may be predictive of eventual success or failure in treatment.

In a review of the literature on predictor variables in the behavioral treatment of obesity, Cooke and Meyers (1980) conclude that three variables have been consistent predictors of response to treatment. These are: 1) the subjects cognitions concerning his or her behavior during treatment, 2) social support, and 3) ability to follow self-control procedures and reinforce appropriate behavior. However, they suggest that obese individuals are heterogeneous in regard to the etiology and to the maintenance of the weight problems. Demographic variables, personality characteristics,

eating habits, age of onset of obesity, and social support may interact in a unique way to predict an individual's repsonse to treatment.

The purpose of this study was to identify some characteristics that might differentiate between individuals who have never been heavy, individuals who were once heavy and successfully able to lose weight, and individuals who are currently obese.

Numerous studies have demonstrated the negative attitudes and prejudices held against those who are obese (Bruch, 1973; Staffieri, 1972; Wooley, et al., 1979). Therefore, it seems reasonable to assume that currently obese subjects will have a poor overall self-concept and a poor physical self-concept, but we asked ourselves how would they compare with those who were once obese and have lost weight and those individuals who have never been heavy.

Self-control has previously been identified as an important predictor of weight loss in behavioral weight reduction programs, but will there be differences between these three groups? It is hypothesized that average weight individuals and successful weight losers will have greater self-control than obese subjects.

An important aspect of self-control is self-reinforcement. (Bellack et al., 1974; Bellack & Tillman, 1974) have found that individuals with an external locus of control were more dependent upon others and make less effective use of self-reinforcement than those individuals with an internal locus of control. It is hypothesized that successful weight losers will be more internal than obese subjects.

Previous research has suggested that there is a significant correlation between engaging in alternate activity to

avoid eating and weight loss. It is hypothesized that individuals of average weight and individuals who were once heavy and successfully able to maintain a weight loss would have activities other than eating as high in reinforcement value.

Method

Subjects. The sample was composed of 99 subjects (59 females, 40 males) who were recruited through media and classroom announcements. They were told that they would be paid $10 and be given a free meal for two hours participation in a study of the characteristics associated with body size, and that we wanted overweight and average sized subjects. Each potential subject was given a prescreening telephone call to determine if they could be classified as: "average" weight which meant they were never more than 5% above their ideal weight as determined by the Metropolitan Life Insurance Tables, or classified as "previously overweight and now average" (which meant that at some time in their lives they were more than 15% overweight but are currently no more than 5% overweight), or classified as "overweight" (which meant they were more than 15% above their ideal weight).

The subjects average age was 29 with the range being from 18 to 59 and the average amount of overweight was 31% with a range of 0 to 172%.

Procedure. The selected subjects were invited to come to the Psychological Services Center at the University of South Carolina campus in groups of 8 to 10. After a superficial explanation of the study the questionnaires were administered in a counterbalanced order. Midway through administration of the questionnaires, subjects were given their free meal and videotaped while eating. After the session was completed, subjects were informed that they had been videotaped. (However, we have not analyzed the

videotapes of subjects eating so it will not be discussed further in this paper.) Subjects who were overweight were then given the opportunity to either take part in a future weight reduction program or to take the money that we had promised in the advertisements.

Measures. All subjects were asked to complete a questionnaire battery which included:

1. The Tennessee Self-Concept Test (Fitts, 1965) -- which is composed of 100 items and can be scored so that the subjects opinion along 5 dimensions; physical self, moral-ethnical self, personal self, family self, and social self can be compared with a standardization sample. For this study we used only the total self-concept score and the items that reflected attitudes about physical self.
2. The Self-Control Schedule (Rosenbaum, 1980) -- is a 36 item self-report scale with a 6 point, Likert-like format that assesses an individuals tendency to utilize self-control methods while working on solutions to behavioral problems. Additionally, the scale measures perceived self-efficacy and ability to delay gratification.
3. The Paired Comparison Reinforcement Scale (Wagner, 1976) -- is a 190 item paired comparison questionnaire designed to assess the relative reinforcement value of 11 categories of activities including eating, smoking, drinking, work, active leisure, passive leisure, competitive striving, and four levels of social activity. (These include isolation, family and friends, remote contact and intimacy.) Each item is paired with every other item so that the sum score for each item should indicate its rank in the individual's reinforcement hierarchy relative to the other activities included.

4. The Health Locus of Control (Wallston, Wallston, Kaplan, & Maides, 1976) -- is an area-specific locus of control measure for prediction of health-related behavior. The scale consists of 11 items in a 6 point, Likert-type format. When the scale is scored in the external direction it means that the individuals consider that the condition of their health is basically determined by influences outside of themselves, while, on the other hand, if they score in an internal direction, they view themselves as responsible.

5. The Activities Questionnaire -- is a list of 15 activities which are rated by the subject relative to the frequency or duration of performance of the various items such as meals, hours of job-related work, hours engaging in vigorous physical activity, time spent alone, time working on hobbies, etc.

Results and Discussion

A multivariate analysis of variance indicated that there was an overall significant group effect (.0001) on the variables being measured.

The results of the individual one way ANOVA's (Table 1) indicate a significant difference between groups on the physical self-scale of the Tennessee Self-Concept Test. The physical self-scale measures an individual's view of thier body, state of health, physical appearance, and sexuality. This was significant at .0001.

From the activity scale, the variables that significantly differentiated between the groups were: the number of hours spent performing job related work; the number of hours spent in vigorous physical activity; the number of hours spent with friends; and the number of hours spent relaxing. The groups also tended to spend differing amounts of hours alone per week but

this was not quite significant.

The results from the Paired Comparison Reinforcement Scale suggested that 3 reinforcement categories had significantly different reinforcement values. These categories were eating favorite foods, having a drink or drinking with friends, and passive activities such as reading and watching television or taking it easy. The groups also tended to differ in the reinforcement value of physical activity or working on a hobby, but this was not quite significant. For the Health Locus of Control and the self-Control Test the ANOVA's were not significant. The comparisons of the performance of each group on the physical self-scale (Table 3), suggests that obese individuals have a significantly lower physical self-concept than individuals who have always been average and individuals who were once heavy but are now thin. Interestingly, there is no difference between average and no-average individuals in physical self-concept which belies the popular notion that overweight individuals continue to perceive themselves as fat although they are now thin.

The comparisons of the performance of each group on the activity scale suggests that always average individuals spend significantly more hours in vigorous physical activity than obese individuals, and spend significantly less hours doing job related work than both those individuals who were once heavy and are now thin, and those individuals who are currently overweight. Conversely, always average individuals spend significantly more time with friends than individuals in the other two groups.

Comparing group performance on the Paired Comparison Reinforcement Scale suggests that obese individuals find eating their favorite foods and engaging in passive activity, or relaxing, significantly more rein-

forcing than always average and formerly overweight individuals. On the other hand, always average and formerly overweight individuals find drinking and engaging in physical activity, or a hobby, more reinforcing than overweight individuals.

Correlations were also examined to explore the relationship between percentage overweight and the subjects performance on the various questionnaires. Physical self, the amount of time spent with friends, the number of hours spent in vigorous physical activity, and the reinforcement value of drinking were negatively correlated with being overweight (less than .05). When looking at the health locus of control we find that the heavier the subject the more external they are in their beliefs. Also, correlated with percentage overweight were the number of snacks eaten per day; the number of hours of job related work, and the reinforcement value of food.

Interestingly, there are a few variables that were found to correlate highly with a number of other variables. The amount of physical activity engaged in, the reinforcement value of food, and the reinforcement value of passive activity correlated significantly with being overweight, (as said previously, but also these variables correlated with) self-control, physical self, and self-concept. This suggests that the person who finds food highly reinforcing and chooses passive activity over physical activity is likely to be overweight, have little self-control, and have a low physical-self and total-self-concept.

A problem that developed with this study was related to the fact that we had more overweight volunteers which resulted in unequal N's and that our overweight subjects tended to be older.

In summary, one of the aims of this study was to identify character-

istics that differentiate overweight, formerly overweight, and always average individual from one another. We found that individuals did differ on physical self-concept, the number of hours spent in various types of activity, and the reinforcement value of different behaviors.

A second aim of this study was to utilize the information gained from Phase I to develop a treatment program, has also been accomplished. We are currently conducting a weight-control program for the obese subjects from Phase I that includes increasing exercise, improving self-concept, and reinforcement enhancement, in addition to techniques to increase self-control. Subjects were assigned to participate in the various components relative to their need based upon their scores on various measures. We will be comparing the weight loss of this group with subjects who were assigned to a traditional behavioral/management program.

TABLE 1 - ONE WAY ANALYSIS OF VARIANCE

Dependent Variable	DF	Mean Square Model	Mean Square Model	F Value
Self Control	1,97	4.25	470.76	0.01
Physical-Self	1,97	1527.80	72.35	21.12***
Self-Concept	1,97	3014.89	1189.455	2.53
Health Locus of Control	1,97	169.03	62.09	2.72
# meals/day	1,97	0.07	0.42	0.16
# snacks/day	1,97	0.04	1.90	0.02
# alcoholic beverages/ day	1,97	0.85	1.15	0.74
# hours job related work/week	1,97	64.36	3.10	20.80***
# hours non-work related work/week	1,97	7.89	3.61	2.21
# hours engaging in vigorous physical activity/week	1,97	23.13	2.45	9.43*
# hours spent along/ week	1,97	15.88	4.82	3.29
# hours spent with family/week	1,97	9.86	4.97	1.98
# hours spent with friends/week	1,97	93.07	3.39	27.43***
# hours spent engaging in hobbies/week	1,97	0.46	2.62	0.17
# hours spent in passive activity	1,97	16.87	3.32	5.09*
# of social act/week	1,97	3.00	2.16	1.39
Value of favorite foods	1,97	2797.14	463.65	6.03*
Value of having a drink	1,97	8826.76	388.55	22.72***
Value of spending time with family, friends	1,97	235.50	23.91	0.99
Value of being intimate with someone you love	1,97	1287.58	993.74	1.28
Value of being alone	1,97	372.87	418.08	0.89
Value of passive actv. relaxing	1,97	1568.46	248.78	6.30**
Value of physical actv. or working on hobby	1,97	1259.71	355.94	3.54

$p < .05$* $p < .01$** $p < .001$***

TABLE 2 T - TEST

VARIABLE	Average (A) Vs Now Average (NA)	Average Vs Obese (O)	Now Average Vs Obese	Means
Physical Self	t = .1227 df = 37	t = 4.3042*** df = 80	t = 3.5115*** df = 75.0	A = 29.23 NA = 29.76 O = 28.85
# Hours Job related work/week	t = -4.0591 df = 21***	t = -6.9816*** df = 61	t = -.3780 df = 75	A = 1.55 NA = 3.94 O = 3.75
# Hours spent engaging in vigorous physical activity/week	t = 1.3213 df = 37	t = 2.9387** df = 80.0	t = 1.1945 df = 75.0	A = 3.55 NA = 2.82 O = 2.35
# Hours spent alone/week	t = -1.0857 df = 37	t = -1.8732 df = 80	t = -.4750 df = 75	A = 3.59 NA = 4.29 O = 4.6
# Hours spent with friends/ week	t = 3.0151** df = 37	t = 5.1213 df = 80***	t = 1.5471 df = 75	A = 6.0 NA = 4.35 O = 3.57
# Hours spent in passive activity	t = -.2465 df = 37	t = -2.0367* df = 80	t = -1.5650 df = 75	A = 3.86 NA = 4.00 O = 4.80
Value of eating favorite food	t = .9478 df = 37	t = -1.9452* df = 80	t = -.30136** df = 75	A = 40.82 NA = 34.41 O = 51.43
Value of having a drink	t = 1.5812 df = 22	t = 6.0083*** df = 60	t = 2.0796 df = 75*	A = 51.45 NA = 40.94 O = 28.73
Value of Passive Activity	t = 1.0206 df = 37	t = -2.0248* df = 80	t = -.3.0053 df = 75**	A = 46.27 NA = 41.35 O = 54.20
Value of engaging in Physical Activity or Working on a Hobby	t = .0642 df = 37	t = 1.7740 df = 80	t = 1.3714 df = 75	A = 58.50 NA = 58.12 O = 50.55

p .05*
p .01**
p .001***

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